Photo

Raymond H. Lazinski

RECORDAK

MIRACODE

SYSTEM

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MIRACODE stands for Microfilm Information Retrieval Access CODE. With this new system, it is possible to retrieve any one of more than 900,000 pages of information in less than 15 seconds at each High Speed Retrieval Station. The new Recordak MIRACODE System uses an index code in the form of clear and opaque rectangles (binary code) on the microfilm to identify each group of document images.

This new Information Retrieval System was designed for those applications where it is desirable to locate documents by their subject content or—by their file number. The searcher is in direct contact with the document collection as he simply calls for a display or paper print of those records that meet all the conditions of his request. The file browsing capability locates only those documents pertinent to the request. Automatic checking circuitry is built in to assure the user that *all* reports concerning his request will be accurately located.

The fundamental requirement of any I. R. system is indexing. Here, the user has a choice, and the involvement depends on the desired end result. A review of the system from indexing through retrieval will demonstrate the excellent Information Retrieval advantages of the Recordak MIRACODE System.

Indexing

Two methods of indexing documents are provided:

1 Indexing by document assigned number (project number, case history number, etc.)

2 Indexing the subject contents of the document (Descriptors)

Here's how it works. A report is reviewed to determine which descriptors will best identify the contents. A code sheet is prepared which identifies the document by number and/or lists the numeric descriptors which will be used for encoding that particular document.

Indexing by the assigned document number is done simply by listing the number on the code sheet.

Indexing a document by subject content is accomplished according to the pattern of all other information retrieval systems which use descriptors to identify a wide variety of subjects. In the Recordak MIRACODE System, each descriptor is assigned a three digit number. This means that as many as 1,000 descriptors can be used in *each* file category.

Thereafter, the documents and the code sheet are forwarded to the microfilm operator for recording on microfilm.

Recording on Film

The Recordak MIRACODE Microfilmer is a new planetary 16mm unit especially designed for high resolution recording, accurate illumination adjustment, and includes convenient operator controls. The documents to be recorded are placed on the platen of the microfilmer within the area delineated by the document positioning finder light. To record the code, nine numeric selector slide switches are provided. These are color coded to permit the recording of three numeric characters in each code column. The operator has only to set the selector slide switches to the numbers indicated on the index sheet. After the code numbers have been set, the operator can conveniently verify her selection by checking the index sheet against an in-line selector display. Several other visual and audible signals are provided to assist the operator in the sequence of operation.

When a roll of film is completed, it is removed from the microfilmer and forwarded for processing. In some applications, it may be desirable to have several duplicate copies made from the original roll. The film is mounted into the Recordak Microfilm Magazine which provides the self-contained "package" facility for automatic film threading in the reader, and convenient labeling by subject category.

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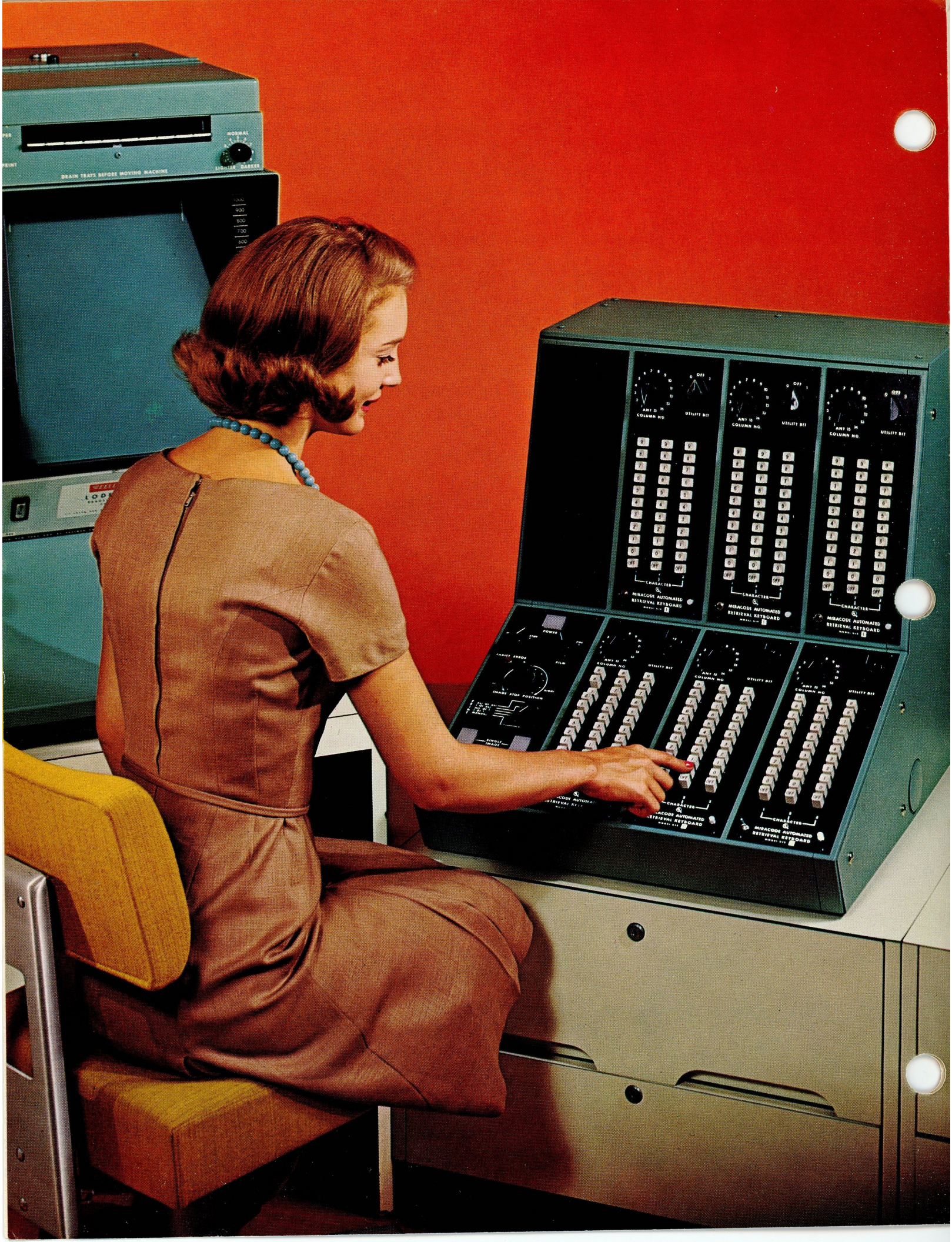

DRAIN TRAYS BEFORE MOVING MACHINE
NORMAL
LIGHTER
DARKER
MIRACODE AUTOMATED RETRIEVAL KEYBOARD
CHARACTER
ANT IS COLUMN NO.
UTILITY BIT
IMAGE STOP POSITION
SINGLE IMAGE

Retrieval Station

The heart of the MIRACODE System is the new Recordak High Speed Retrieval Station. It has the capability of storing up to 490 film magazines within fingertip reach. The station is modular in design and may be arranged in several configurations.

A special Recordak Lodestar Reader-Printer, capable of searching binary code on microfilm at high speed, is the center of the High Speed Retrieval Station. It features rapid document image access, paper printout, and extreme versatility of film file-browsing. Average access time for a desired report is only eight seconds from the instant the operator depresses the search button until the selected document image is positioned on the reader screen ready for review or paper printout. This new reader-printer is connected to a Keyboard Control unit and up to 15 MIRACODE Automated Retrieval Keyboards according to the searching depth requirements of the application. A high-speed transistorized logic unit capable of electronic speed completes the retrieval package.

Searching

The information retrieval operator has only to key in the desired search parameters, place the film magazine containing the search category into the new Lodestar Reader Printer, and depress the search button. The coded microfilm is scanned at the rate of 10 feet per second. This means that the entire 100 foot roll can be interrogated in only 10 seconds. The first page of a specific coded document which answers the search request is located and is automatically displayed, ready for viewing or printout. Other documents, answering the same parameters may be located by merely depressing the search button again.

Search Time

Even if a file category requires as many as five full microfilm magazines, which could contain as many as 10,000 document images, the entire category search time would be less than two and a half minutes. Of course, if the category is contained in only one film magazine, the total search time is only 10 seconds.

The MIRACODE Keyboard Control unit provides for all the necessary functions of initiating a search, moving from one image to another within a document, indicating that the equipment is operating properly, and can be set for searching either negative or positive microfilm. In addition to the manual paper print mode, the operator can also select any one of four automatic paper print modes.

Undetermined Sequence Search

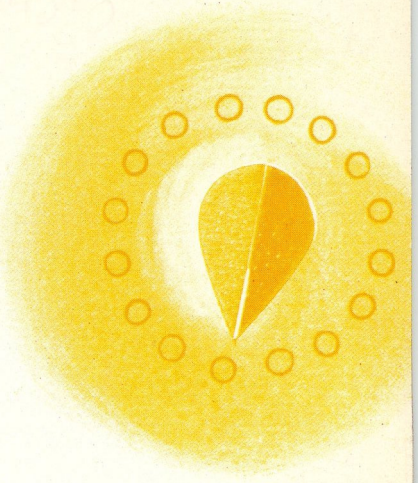
The most important single advantage of the Recordak MIRACODE System is its ability to search for subject descriptors in an undetermined sequence. For example, it may be desirable to locate a document in Category "X". This would be indexed on one or more film magazines. Suppose that one of the documents recorded was indexed as shown below.

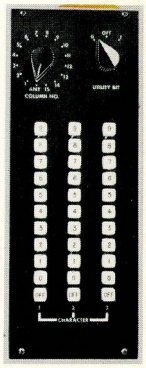
Subject	*Descriptor*
M	365
C	150
J	031
P	130
A	081

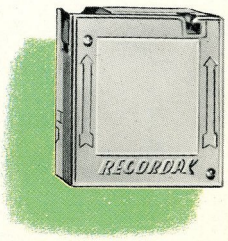
The subject descriptors would be encoded on the microfilm in the sequence shown, i.e. 365 – 150 – 031, etc. An individual requiring information on this category has no idea of the sequence used in recording the subject descriptors. Therefore, he might request all documents from the Information Retrieval Center which contain (1) J, (2) C, (3) P, and (4) M. The MIRACODE System "Undetermined Sequence Search" capability would find the document used in the example above automatically, as it contains all four descriptors. The System would also locate all other documents containing the four descriptors he had requested.

Flexible Search

In some cases, a searcher might overdefine his requests and not locate a document to answer all the descriptors. He then has only to remove the least significant descriptor until his request is answered. This file-browsing capability provides the searcher excellent selection of only those documents which best suit his needs.







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A similar example could be made in the fields of chemistry, metallurgy, physics, etc. — in fact, in most all applications where it is desirable to locate a document by its subject content or a component by its characteristic.

Format Versatility

The code format versatility and search capabilities of the new Recordak MIRACODE System were designed to meet basic information retrieval needs. For example, it is possible to index a document with whatever amount of code is necessary to numerically describe the documents by their subject content or encode only the assigned accession number. If desirable, both of these encoding methods may be used on the same documents on the same roll of film. Using a three-digit descriptor, it is possible to assign as many as 1,000 descriptors per file category. Each file category is contained in one or more film magazines. This of course, is always the first point of file selection.

Film Capacity

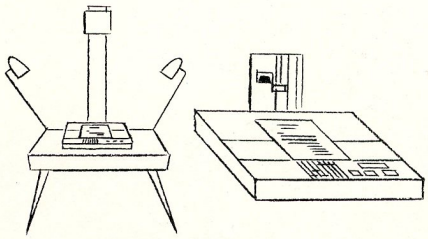
Each column of code on film contains three numeric characters. Approximately three columns of code, or nine numeric characters, occupy the space of a standard 8½" x 11" lettersize document recorded at 24:1 reduction. An example of the image-packing density in the MIRACODE System would be as follows: Assume four columns of code per document, and that each document contains an average of six pages; then approximately 2,000 document page images could be recorded with the required retrieval code on only 100 feet of 16mm film.

Each of the MIRACODE Keyboards can be directed to search any column of code from 1 through 15. The keyboard can also be set to search in "any" column which is the position selected when conducting a search for documents by descriptor. Each keyboard, containing three rows of 11 keys each (0 through 9 and an off key) provides the capability for searching one column of code. Up to 15 of these Equality Decimal Keyboards may be used. Normally, an installation will require as many keyboards as are necessary to equal the maximum number of subject descriptors desired for searching at any one time. Generally, a document is coded in depth on film. For example, one document may require as many as 12 to 15 descriptors to encode its total contents. However, a normal search would probably only call for five to seven of these descriptors.

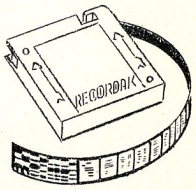
RECORD IT

1. Documents to be microfilmed with associated code.

2. Indexing—a guide, listing document index identification, is prepared for use by the microfilmer operator in recording documents with their retrieval code.



3. Recordak MIRACODE Microfilmer microfilms documents and associated binary coding on 16mm microfilm.

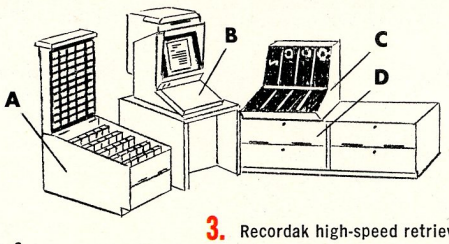


4. Recordak film magazine—after processing, 100 feet of microfilm is loaded into a compact 4" x 4" x 1" magazine. The magazine is inserted into the Recordak Lodestar Reader-Printer for self-threading, high-speed film search and rewind.

RETRIEVE IT

1. Person requesting information from the MIRACODE system.

2. Retrieval index — a comprehensive guide-listing of documents recorded on microfilm.



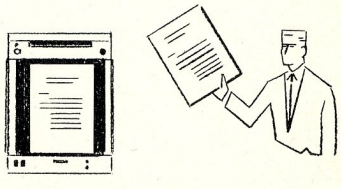
3. Recordak high-speed retrieval station.

A. Retrieval station magazine rack provides arms-reach file-storage of hundreds of thousands of pages of information on microfilm.

B. Recordak Lodestar Reader-Printer, Model PEK electronically searches for and retrieves information.

C. MIRACODE keyboard control includes all operator controls required for searching.

D. MIRACODE automated retrieval keyboards are for push-button input of information retrieval access codes.



4. Person requesting information gets needed information in the form of a projected reader-screen image, or a paper copy.

A good Information Retrieval System supplies the best answers, to the right people, in usable form, in the shortest period of time, and as economically as possible. The Recordak MIRACODE System was tailored to provide these desired end results. Many information retrieval problems now being solved by computers, or in the planning stages, could easily be accomplished by the logic selection and file-browsing capabilities of the MIRACODE System. A number of input and search logic accessories are already under development and their availability will add additional input speed and search logic modes without causing component obsolescence of the basic system.

RECORDAK® CORPORATION

Subsidiary of Eastman Kodak Company

770 Broadway, New York 3, N. Y.

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